

SOUTH FORK TUOLUMNE RIVER BRIDGE  
Yosemite National Park Roads and Bridges  
Spanning South Fork Tuolumne River on Tioga Road  
Tuolumne Meadows vicinity  
Tuolumne County  
California

HAER NO. CA-108

HAER  
CAL  
55-TUOLMV,  
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
U.S. Department of the Interior  
P.O. Box 37127  
Washington, D.C. 20013-7127

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I. INTRODUCTION

Location: The South Fork Tuolumne River Bridge carries the Tioga Road over the river, four miles east of Crane Flat, Yosemite National Park, Tuolumne County, California.

QUAD: TAMARACK FLAT, CA  
UTM: 11/660410/4186075

Date of Construction: 1937

Designer and Builder: Designed by the Bureau of Public Roads, U.S. Department of Agriculture.

Contractor: Morrison-Knudsen Co.

Original and Present Owner: Yosemite National Park, National Park Service.

Structure Type: Reinforced concrete and steel girder deck bridge

FHWA Structure No.: N/A

Present Use: Park road bridge.

Significance: The South Fork Tuolumne River Bridge represents one of the last examples in Yosemite National Park of the National Park Service "rustic style" of architecture as applied to road bridges.

Project Information: This document was prepared as part of the Yosemite Roads and Bridges Recording Project, conducted in summer 1991 by the Historic American Engineering Record.

Richard H. Quin, Historian

## II. HISTORY

This is one in a series of reports prepared for the Yosemite National Park Roads and Bridges Recording Project. HAER No. CA-117, YOSEMITE NATIONAL PARK ROADS AND BRIDGES, contains an overview history of the park roads. In addition, HAER No. CA-XX, TIOGA ROAD, contains more specific information on the road on which the South Fork Tuolumne River Bridge is located.

### HISTORY OF THE SOUTH FORK TUOLUMNE RIVER BRIDGE

The South Fork Tuolumne River Bridge, completed in 1937, was built as part of the construction of the New Tioga Road section between Crane Flat and McSwain Meadows. The steel and reinforced concrete bridge carries the Road over the Tuolumne River's south fork four miles east of Crane Flat. The single-span bridge measures 124' in length from the end of the supporting abutments. The deck is 24' 11" wide, bearing a roadway with a clear width of 24'.<sup>1</sup>

The bridge is constructed of steel beams resting on cement rubble masonry abutments with reinforced concrete backwalls. The beams are each 65' long, joined at center by welds and plated splices, and are reinforced by 3"x3" L-shaped cross bridges 5/16" in dimension. The 11½" high by 10" wide exterior stringers are faced with 9' of concrete, separated from the beams by a 22-gauge copper water stop. Interior stringers are the same height but a full foot thick. The deck is covered with concrete reinforced by ¾" transverse reinforcing bars; this deck is 8½' thick at center, sloping to 7" at the sides to provide for drainage. Reinforcing bars in the deck slab were supported by metal chairs. To carry off the water, three 4" pipe drains are located on the northwest edge at 25' intervals.<sup>2</sup>

On either side of the bridge, 2' 5½" concrete curbs 1' 3" high support a redwood guard rail. This 4"x8" rail is borne between 10"x18" redwood posts spaced at 9' 6" and 9' 7" intervals by a smaller 4"x6" wooden balustrade. The wooden posts are covered with sheet copper water stops. The wooden guard rails are attached to the concrete deck by ¾"x10" galvanized bolts.<sup>3</sup>

The granite masonry abutments are 20' tall by 14' 4½" wide and 32' long, with a maximum batter of 5:12. Exposed faces of the concrete backwalls were prepared in a "staircase" effect prior to being faced with granite boulders. The abutments were provided with 4" weepholes on a 6 percent gradient to provide for drainage at the ground line.<sup>4</sup>

The South Fork Tuolumne River Bridge was one of the last of the Yosemite National Park bridges to be built in the "rustic style" of architecture popularized by the National Park Service. The next phase of bridge building saw streamlined open spandrel arch reinforced concrete bridges constructed along the Big Oak Flat Road. The South Fork Bridge, however, continued the practice of utilizing native materials, in this case wood and stone, although the materials were not used as true structural components. The stone facing of the abutments covers the reinforced concrete which bears the load of the bridge, and the wooden guard rails, though functional, are secondary to the concrete guard curbs upon which they rest. Nevertheless, the result is a pleasing bridge which probably convinces most travelers that the bridge is a harmonious feature sympathetic with its environment. The South Fork of the Tuolumne River rushes down by the side of the bridge in a forceful cascade, and many visitors stop at a turnout on the bridge's east end and walk back to enjoy views of this waterfall during the spring and early summer months before this seasonal waterfall diminishes.

The bridge was designed by the Bureau of Public Roads, which since 1925 oversaw major road projects in the National Parks. The Idaho construction firm Morrison-Knudsen, contractor for the section of the road between Crane Flat and McSwain Meadows (2 miles east of White Wolf) had the responsibility for building the South Fork Bridge as well. The construction camp for the project was set up in the roadbed adjacent to the bridge. Construction began 17 June 1937, when the 13-man crew excavated footings and began quarrying stone for the abutments. In July, the north abutment had been constructed and the wing walls were being built; at the end of the month, 26 percent of the work had been done. The second abutment was 90 percent complete at the end of August. The reinforced concrete abutments were faced with granite quarried 2 miles north of the bridge. In September, the steel beams were put in place, and the concrete deck and curbs were poured. The redwood used in the handrails was obtained from the Pacific Lumber Company of Scotia, California; construction of the rail took carpenters three weeks. The bridge was complete in October and accepted; however, BPR crews still had to finish the grading to the approaches. Final acceptance of the bridge by the Park Service took place on 27 October.<sup>5</sup>

ENDNOTES

1. From measurements taken by HAER, July 1991.
2. U.S Department of Agriculture, Bureau of Public Roads, "Bridge over South Fork Tuolumne River, Tioga Road, Yosemite National Park Project 4-A1." Construction drawings, four sheets, March 1937. Sheet 1, RG 651-A and Sheet 2, RB 651-B.
3. *Ibid.*, Sheet 2.
4. *Ibid.*, sheet 3, RG 651-C.
5. Lawrence C. Merriam, Acting Superintendent's Monthly Report, June 1937, 9; Acting Superintendent's Monthly Report, July 1937, 7; Acting Superintendent's Monthly Report, August 1937, 9; Acting Superintendent's Monthly Report, September 1937, 7; Acting Superintendent's Monthly Report, October 1937, 7; Robert Charles Pavlik, "In Harmony with the Landscape: A History of the Built Environment of Yosemite National Park, 1915-1940" (Master's thesis, University of California at Santa Barbara, 1986), 125-26.

#### IV. BIBLIOGRAPHY

Merriam, Lawrence C. Acting Superintendent's Monthly Report, June 1937, 9.

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Pavlik, Robert Charles, "In Harmony with the Landscape: A History of the Built Environment of Yosemite National Park, 1915-1940." Master's thesis, University of California at Santa Barbara, 1986.

U.S Department of Agriculture, Bureau of Public Roads, "Bridge over South Fork Tuolumne River, Tioga Road, Yosemite National Park Project 4-A1." Construction drawings RG-651 A-D, four sheets, March 1937.